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10/724,205	12/01/2003	Nobuhiro Takano	03280090US	9849

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McGuireWoods LLP
Suite 1800
1750 Tysons Boulevard
Tysons Corner
McLean, VA 22102-4215

EXAMINER	
BERHANU, SAMUEL	
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2838	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,205	TAKANO ET AL.	
	Examiner	Art Unit	
	Samuel Berhanu	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05/6/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 11/29/2002. It is noted, however, that applicant has not filed a certified copy of the 2002-349243 application as required by 35 U.S.C. 119(b). The foreign document is not in the file. Applicant does not state his postcard receipt indicates our receipt. The artifact sheet has a line through the Foreign Priority Document Box. Examiner has sent a message to EDAN Support to attempt scanning, but it is not clear if applicant's document is with USPTO. Applicant may wish to submit/resubmit as applicable.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et. al. (US 6,124,700) in view of Honda et. al. (US 5,387,857).

Regarding Claim 1, Nagai et. al. discloses i Figure 7, a universal battery charger for charging batteries with different number of cells connected in series, comprising: a power supply circuit (15, 16) that produces a predetermined number of voltages different in level for applying selected one of the predetermined number of voltages to a battery, the predetermined number of voltages including a highest voltage and a lowest

voltage; a battery voltage detecting circuit (18) that detects a voltage level across the battery a switch (14) that is connected between the power supply circuit and the battery and is turned ON to allow charging of the battery and OFF to interrupt the power supply circuit from the battery; and a control device (21) that always selects one of the predetermined number of voltages with any being selectable depending upon the detected voltage level across the battery before any charging of the battery and then controls the switch to turn ON so that a rush current does not flow in the battery at the start of charging. Nagai et. al. does not disclose explicitly detecting a voltage across the battery before charging the battery/before any charging of the battery. However, Honda et. al. discloses in Figure 1, column 13, lines 1-5, detecting a voltage across the battery before charging the battery/before any charging of the battery. It would have been obvious to a person having ordinary skill in the art at the time of the invention to detect a battery voltage prior to charging as taught by Honda et. al in Nagi et. al. inorder to avoid over charging, and to monitor residual charge in the battery more accurately.

Regarding Claim 2, Nagai et. al. discloses, wherein the control device controls the power supply circuit to produce a voltage equal to or close to the voltage detected by the battery voltage detecting circuit and further controls the switch to turn on.

Regarding Claim 3, Nagai et. al. discloses in Figures 7, 8 and 10, wherein the control device controls the switch to turn on after expiration of a predetermined period of time from a time when the voltage equal to or close to the voltage detected by the battery voltage detecting circuit is produced by the power supply circuit.

Regarding Claim 4, Nagai et. al. discloses in Figures 7, 8,10 and 14, wherein the control device controls the switch to turn on after expiration of a predetermined period of time from a time when the voltage equal to or close to the voltage detected by the battery voltage detecting circuit is produced by the power supply circuit (Noted that the charging voltage is closer to the detected battery voltage)

Regarding Claim 5, Nagai et. al. discloses in Figures 7, 8,10 and 14, wherein the control device further controls the power supply circuit to produce the highest voltage after the switch is turned on (noted that the charge controller is outputting the highest voltage value based on the battery detection signal while the switch is ON).

Regarding Claim 8, Nagai et al. discloses in Figure 7, battery charger according to claim 2, wherein when a difference between the voltage detected by the battery voltage detecting circuit and the voltage produced by the power supply circuit falls within a predetermined range, the control device controls the switch to turn on Column 27, lines 14-37).

Regarding Claim 9, Nagai et al. disclose Figure 7 and 14, wherein the voltage close to the voltage detected by the battery voltage detecting circuit is a voltage above and closest to the voltage detected by the battery voltage detecting circuit among the predetermined number of voltages (Column 25, lines 1-45).

Regarding Claim 10, Nagai et al. disclose Figures 7 and 14; wherein the control device further controls the power supply circuit to produce the highest voltage after the switch is turned on (the switch is on and charging voltage of 4.2V pass to the battery and the control circuit controls the operation accordingly).

Regarding Claim 11, Nagai et al. discloses in Figures 26,42,46,48, and 50 the switch is directly connected to the battery.

Regarding Claim 12, Nagai et al. discloses in Figure 7, the switch is directly connected to the power supply.

Regarding Claim 13, Nagai et al. discloses in Figure 7, where each of the predetermined number of voltages is applied to the battery by substantially the same components of the power supply circuit.

4. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et. al. (US 6,124,700) in view of Honda et. al. (US 5,387,857) as applied to claim 1 above, and further in view of Terada et. al. (6,483,272).

Regarding Claim 6, Nagai et. al. discloses in Figure 7, the battery voltage detecting circuit (18) detects a voltage a cross the battery and the control device (21) controls the power supply (15) circuit to produce the voltage equal to or close to the voltage detected by the battery voltage detecting circuit, and thereafter controls the switch to turn on. Neither Nagai et. al nor Honda discloses a battery connection detecting device that detects the battery is connected for being charged, wherein when the battery connection detecting device detects that the battery is connected. However, Terada et. al. discloses in Figure 2, battery connection detecting device (129) that detects the battery is connected for being charged, wherein when the battery connection detecting device detects that the battery is connected (Column 5, lines 54-67, Column 7, lines 50-67). It would have been obvious at the time of the invention to the person in the ordinary skill in the art to add the battery connection means as taught

by Terada et. al. in Nagai et. al charging system in order to control the charging process of the secondary battery.

Regarding claim 7, Terada et. al. discloses in Figure 2, wherein when the battery connection detecting device detects that the battery is not connected .Nishida et. al. discloses in Figures 1-5, the control device n (6) controls the power supply circuit to produce the lowest voltage (noted that the charging voltage becomes zero when the switch is in off position and no electrical connection is established between the battery and the voltage sources). (Please see paragraph 6 above, rejection of claim 6)

4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et. al. (US 6,124,700) in view of Hiyoshi et. al. (US 5,675,816).

Regarding Claim 14, Nagai et. al. discloses in Figure 14, a method of charging a battery using a universal battery charger comprising: a power supply circuit (11) that produces more than tow different predetermied number of voltages each different in level for applying a selected one of the predetermined number of voltages to a battery prior to any charging with any of the predetermined number of voltages being selectable based on a detected voltage level across the battery, the predetermined number of voltages including a highest voltage and a lowest voltage; a switch (22) connected between the power supply and the battery and is turned ON to connect the selected one of the predetermined number of voltages to the battery and OFF to interrupt the power supply from the battery; and a controller (26) that controls the power supply to produce a voltage to be applied to the battery. Nagai et. al. does not disclose explicitly, controls the switch by delaying closure of the switch after application of a signal to control the

power supply to prevent a rush current flowing in the battery when the voltage applied to the battery is switched from one level to another level. Hiyoshi et. al. discloses in Figure 10, element 292, a stabilization circuit that resists rash current at the time of the start of the charging current, controls the switch by delaying closure of the switch after application of a signal to control the power supply to prevent a rush current flowing in the battery when the voltage applied to the battery is switched from one level to another level. (Column 19, line 41-54). It would have been obvious at the time of the invention to the person ordinary skill in the art to add a stabilization circuit as taught by Hiyoshi et. al. in Nagi et. al. charging circuit in order to protect the drastic reduction of battery life due to in-rush current.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et. al. (6,124,700) in view of Cheiky et. al. (US 6,522,102), and further in view of Honda et. al. (US 5,387,857).

Regarding Claim 15, Nagai et. al. discloses in Figure 14, a method of charging a battery using a universal battery charger comprising: a power supply circuit (11) that produces a predetermined number of voltages ; a battery voltage detecting circuit (18) that detects a voltage level across the battery; a switch (22) that is connected between the power supply circuit and the battery and is turned ON to allow the charging of the battery and OFF to interrupt the power supply circuit from the battery; and a control device (26) that always selects one of the predetermined number of voltages to be applied to the battery prior to any charging with any of the predetermined number of voltages being selectable based on the detected voltage level across the battery. Nagai

et. al. does not disclose explicitly, voltages having a first level, a second level which is lower than the first level and a third level which is lower than the second level, and a selected one of the predetermined number of voltages beingapplied to the battery, and detecting battery voltage velour charging the battery; wherein the method comprises: first step of selecting a voltage having the third level before the battery is connected; second step of selecting a voltage from the first, second and third levels to be applied to the battery after the battery is connected, depending upon the voltage across the battery detected by the battery voltage detecting circuit; and third step of selecting a voltage having the first level (4.2) to be applied to the battery after the second step. Cheiky et. al. discloses in Figure 3, voltages having a first level (V3), a second level (V2) which is lower than the first level and a third level (V1) which is lower than the second level, and a selected one of the predetermined number of voltages being applied to the battery , and detecting battery voltage velour charging the battery; wherein the method comprises: first step of selecting a voltage having the third level (V1) before the battery is connected; second step of selecting a voltage from the first, second and third levels to be applied to the battery after the battery is connected, depending upon the voltage across the battery detected by the battery voltage detecting circuit; and third step of selecting a voltage having the first level (V3) to be applied to the battery after the second step. It would have been obvious to a person having ordinary skill in the art to adapt Cheiky et. al. Multiple plateau battery charging method in Nagai et. la. charging method in order to prevent battery over charge. Further, However, Honda et. al. discloses in Figure 1, column 13, lines 1-5, detecting a voltage

across the battery before charging the battery/before any charging of the battery. It would have been obvious to a person having ordinary skill in the art at the time of the invention to detect a battery voltage prior to charging as taught by Honda et. al in Nagi et. al. inorder to avoid over charging, and to monitor residual charge in the battery more accurately.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et. al. in view of Cheiky et. al., and view of Honda as applied to claim 15 above, and further in view of Long (US 3,886,427).

Regarding Claim 16, Long discloses periodically imitating charging run in Figures 1 and 2, wherein the third step is performed when a predetermined period of time has elapsed after the second step (Column 2, lines 42-68 and Column 3, lines 1-7). It would have been obvious to a person having ordinary skill it the art at the time of the invention to add a counter in Nagi et. al. charger as taught by Long in order to periodically initiate charging run to maintain a charge on the battery and to prevent sulfonation .

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et. al. in view of Cheiky et. al., and view of Honda as applied to claim 15 above, and further in view of Inaniwa et. al. (US 4,609,861).

Regarding Claim 3, Inaniwa et. al. discloses in Figures 3, wherein the third step is performed when the voltage produced by the power supply circuit has dropped to a level close to the detected battery voltage. It would have been obvious to a person

having ordinary skill in the art to deploy a trickle charge means in Nagai et. al. charger as taught by Inaniwa et. al. in order to prevent battery over charge.

Response to Arguments

8. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Berhanu whose telephone number is 571-272-8430. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KARL EASTHOM
SUPERVISORY PATENT EXAMINER